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EPID 7233 - Public Health Surveillance Methods

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Georgia Southern University
Jiann-Ping Hsu College of Public Health

EPID 7233– Public Health Surveillance Methods

<u>Instructor:</u>	Jian Zhang, MD. Dr. PH.
<u>Office:</u>	2032, Hendricks Hall
<u>Phone:</u>	(912)-478-2290 (office, rarely used), (678)-814-3788(cell)
<u>E-Mail Address:</u>	Jianzhang@georgiasouthern.edu (best way to reach instructor)
<u>Office Hours:</u>	Monday 3:00 PM - 6:00 PM Tuesday 9:00 AM - 12:00 PM Consultation appointments are available on an as-needed basis.
<u>Class Meets:</u>	Room: 3001, Hendricks Hall; Time: 2:00 – 4:45, Tuesday

Prerequisites: PUBH6133 or equivalent or permission of instructor.

Catalog Description:

This course will provide students with a strong foundation in public health surveillance of both health conditions and risk factors. The course will teach the theory and practice of surveillance supported by many examples of surveillance systems from the developed and developing world. The class will build on and reinforce basic epidemiologic concepts. Students will be given the opportunity to design and evaluate a surveillance system.

Required Textbook:

Teutsch & Churchill. *Principles and Practice of Public Health Surveillance*. 3rd Edition. Oxford University Press

Supplemental reading materials, chapters from other books or publications appearing in major journals, will be provided by the instructor and accessible online at the course website or distributed during class.

Program Goals:

Upon graduating, a student with an MPH in Epidemiology should be able to:

1. Analyze a public health problem in terms of magnitude, person, and time in rural and urban settings.
2. Describe populations by the following: race, ethnicity, culture, societal/educational/professional backgrounds, age, gender, religion, disability, and sexual orientation.
3. Design surveillance for a public health issue.
4. Identify surveillance data needs.
5. Implement new or revise existing surveillance systems.

6. Explain key findings from a surveillance system.
7. Design surveillance systems to include groups subject to health disparities or other potentially underrepresented groups.
8. Apply current knowledge of disease etiology for use in guiding the practice of epidemiology.
9. Explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues.
10. Apply principles of good ethical and legal practices as they relate to study design and the collection, maintenance, use and dissemination of epidemiologic data.
11. Demonstrate management of data from surveillance, investigations, or other sources.
12. Analyze data from epidemiologic investigations, studies, and surveillance.
13. Demonstrate use of standard population categories or subcategories when performing data analysis with special emphasis on the identification of health disparities and promotion of health equity.
14. Summarize results of analysis of epidemiologic data.
15. Draw conclusions based on the results of analysis of epidemiologic data, including making causal inference on the basis of the principles of causation.
16. Apply the basic terminology and definitions of epidemiology for the investigation of acute and chronic health conditions or other adverse outcomes in a population.
17. Explain the use of laboratory resources to support epidemiologic activities.
18. Explain how determinants of health affect public health practice.
19. Produce written and oral reports and presentations that communicate necessary information to professional audiences, policy makers and the general public.
20. Evaluate the strengths and limitations of epidemiologic research findings.
21. Apply different basic epidemiologic study designs and selection of variables process used in public health.
22. Apply principles of informatics, including data collection, processing, and analysis, in support of public health practice.

23. Demonstrate use of specific sociocultural factors in a population or community for the interpretation of epidemiologic findings.
24. Design epidemiologic investigations using languages and approaches tailored to the targeted population or community.
25. Demonstrate the basic principles of risk communication.
26. Recommend evidence-based interventions and control measures in response to epidemiologic findings.
27. Analyze epidemiologic data to assist in the evaluation of public health programs at the regional, state, local, or tribal level.
28. Prepare proposals, in whole or in part, to obtain funding for epidemiologic activities.

Course Objectives:

At the completion of this course the student will be able to:

1. Identify relevant data and information sources within and outside existing public health systems. (Competency 1, 3, 4,)
2. Quantify population-based health risks (Competency 1, 2, 8-9, 12, 16, 19, 22, 27)
3. Identify types of surveillance methods for specific public health problems (Competency 3, 4, 8)
4. Identify information system(s) to support surveillance systems (Competency 3-5, 7, 22)
5. Recommend types of surveillance systems for specific public health problems (Competency 3-5, 7, 9, 22, 26)
6. Identify additional burden to public health system and reporting entity anticipated to result from the proposed surveillance system. (Competency 3, 4, 7-9, 22)
7. Create case definition(s), based on person, place, and time. (Competency 3, 4, 7, 8, 17)
8. Describe sources, quality and limitations of surveillance data (Competency 4, 17, 19)
9. Define the data elements to be collected or reported using standard categories, particularly when defining special populations. (Competency 3, 4, 7, 8, 13, 17, 19)
10. Identify mechanisms to transfer data from source to public health agencies (Competency 4, 5, 10, 11, 22)
11. Define timeliness required for data collection (Competency 4, 4, 5, 10, 11, 22)
12. Describe potential uses of data to inform surveillance system design. (Competency 4, 5, 10, 11, 22, 26)
13. Define the functional requirements of the supporting information system (Competency 4, 5, 10, 11, 22)
14. Design data collection tools to capture information needed to assess health disparities (Competency 3, 7, 8, 13, 23)
15. Design sampling plan to ensure sample size large enough to provide stable estimates in populations of interest (Competency 3, 7, 8, 13, 23)
16. Define objectives and uses of surveillance system (Competency 3-5, 7, 27)

17. Develop a plan to test data collection, data storage, and analytical methods. (Competency 5, 10, 11, 22)
18. Develop a plan to verify that data collection occurs according to the defined surveillance system parameters (e.g., timeliness, frequency). (Competency 5, 10, 11, 22)
19. Develop a plan to monitor the quality of surveillance system data. (Competency 5, 10, 11, 22)
20. Explain the importance of good working relationships with reporting entities. (Competency 5, 10, 11, 22)
21. Examine system's results in the context of current scientific knowledge (Competency 6, 9, 15)
22. Identify implications of system's results to public health programs (Competency 6, 9, 15)
23. Draw conclusions from surveillance data (Competency 6, 9, 15)
24. Evaluate surveillance systems using national guidelines and methods (Competency 3-7, 17, 19)
25. Collect and use public health data, including individual identifiers, only with clearly identified justification. (Competency 10, 22)
26. Demonstrate balance of respect for people and individual privacy with the risk of the threat to the community (Competency 10, 22)
27. Apply public health code of ethics to collection, management, dissemination, and use of data and information, including principles of justice, timeliness, and transparency of purpose. (Competency 10, 22)
28. Explain privacy laws to protect confidentiality, including Health Insurance Portability and Accountability Act and applicable state and local privacy laws. (Competency 10, 22)
29. Design database with the necessary variables and data dictionary. (Competency 3, 7, 11, 17, 22)
30. Adhere to national standards of coding and variables to ensure accuracy and ease of analysis. (Competency 3, 7, 11, 17, 22)
31. Design data entry techniques that ensure accuracy and reliability. (Competency 3, 11, 17, 22)
32. Perform data cleaning and error correction. (Competency 3, 5, 11, 22)
33. Design databases that support analysis using geographic information. (Competency 3, 5, 11, 22)
34. Maintain original data, but transform data as needed for specific analyses. (Competency 10-13, 22)
35. Create new variables as necessary to support analysis of data (Competency 10-13, 22)
36. Change format of data from one software application to another if necessary (Competency 10, 11, 22)
37. Select software for analyzing and managing data (Competency 11, 12, 22)
38. Analyze data using geospatial and graphical representations (Competency 11-13, 22)
39. Identify surveillance and other data for use in tracking public health program objectives and outcomes (Competency 3-7, 27)
40. Communicate information about progress toward program objectives and outcomes. (Competency 19, 27)
41. Combine data and information from multiple sources to create new information to support public health decision-making. (Competency 11, 22, 27)

Outline of Course Content

Week	Topic Assignment (Development of the class project)	Reading (note)
1 01/13	Introduction to Surveillance Systems	Ch1: Historical Development
2 01/20	Steps in setting up, Objective, Case definition (Topic for group project will be provided)	Ch2: Considerations in Planning a Surveillance System
3 01/27	Traditional sources of surveillance data (vital statistics, reportable disease)	Ch3: Sources of Health-Related Information
4 02/03	Alternative and complementary sources (Topic selection finalized)	
5 02/10	Issues with surveillance data analysis	Ch6: Analyzing and Interpreting Surveillance Data:
6 02/17	From data to action (use of surveillance) (Due outline of your group project)	CDC publication Zhang J (2011) J Infect Dis. 204 (suppl1): S463-S470.
7 02/24	Evaluation of a surveillance system	Ch8: Evaluating Public Health Surveillance Zhang J (1997) J of infectious Disease; 175:s122-34
8 03/03	Challenges caused and opportunities created by social change and technology development	Ch 4, 10, 11, 12, and 13
9 03/10	Class project review (1 st draft of your group project)	
	Spring break – no class	
10 03/24	Surveillance in polio and other vaccine-preventable diseases	MMWR 2001 Oct 19;50(41):893-897
11 03/31	Dissemination of surveillance reports (Finalized submission of group project) *	
12 04/07	Syndromic surveillance, Influenza surveillance The Early Aberration Reporting System (EARS)	
13 04/14	Disaster surveillance	
14 04/21	Risk behavior surveillance (BRFSS- CDC)	Zhang J (2014) Pediatrics; September
15 04/28	Public health surveillance in the developing countries	Zhang J (2011) J Infect Dis. 204 (suppl1): S455-S462.
16 05/05	Course Wrap-Up and Final Evaluations	

* We will emphasize the quality of the final version of your literature review in evaluations, but some consideration will also be given to the amount of progress made over the course of the semester.

Samples of your work may be reproduced for search purposes and/or inclusion in the professor's teaching portfolio. You have the right to review anything selected for use, and subsequently ask for its removal.

Instructional Methods:

Class meetings will be a combination of lecture, class discussion, and active participation. Computer-generated presentations will be used in the lecture portion of this course. Prior to each lecture, the student is encouraged to complete the recommended readings and to thoughtfully answer the study questions for that learning experience. This active learning exercise is intended to assist the student in prioritizing and focusing their attention to the more salient points of the material found in the supportive readings. In this way it is hoped that the learner will be better prepared to successfully accomplish the learning objective of each lecture experience.

Assignments:

Mid-term exams: Students will complete one take-home exam, addressing basic concepts of surveillance systems, and applying the principles and methods discussed in the class to evaluate an existing surveillance system.

Grading:

Component	%
Final exam (take home)	30
Class participation, <ul style="list-style-type: none">• Class attendance (5 points)• Discussion participation (5 points)	10
Final of class project (In the format of publishable manuscript) <ul style="list-style-type: none">• Importance (15 points)• Methodology (15 points)• Lessons learned (10 points)• Clarity (20 points)	60

90 – 100	A	80 – 89	B	70 – 79	C
60 – 69	D	Below 60	F		

Your grades **will not** be posted. All exams and assignments will be graded and returned promptly so that students may accurately calculate their grades at any point in time during the semester.

All your work needs to be produced in a professional manner. The typos, grammar errors should be kept at minimum if any. The format and readability of your submissions will be taken into consideration when the instructor grades. At the present time, only MS word files are acceptable.

All assignments should be received by 12:00PM of the due day by electronic submission to jianzhang@georgiasouthern.edu. You must receive a confirmation of receipt to assume these have been well received by instructor for the final grade. You are responsible for these submissions and if the files are not received in a readable format, hard-copies are due at the same time in my mailbox located in the Western wing of Cone Hall. So attempt early submission.

There are times when extraordinary circumstances occur (e.g., serious illness, death in the family, etc.). In such circumstances, and/or if you need additional time to satisfactorily complete any course requirement, please consult with the instructor within a reasonable amount of time.

***** Technological difficulties do NOT constitute legitimate excuses or emergencies*****

Extensions are not guaranteed and will be granted solely at the discretion of the instructor.

NO EXTRA CREDIT PROJECTS WILL BE ASSIGNED!

CLASS POLICY

Class Attendance and Participation Policy: Federal regulations require attendance be verified prior to distribution of financial aid allotments and University policy requires all students to attend the first class meeting of all classes for which they are registered. Excused absences follow the criteria of the Graduate Catalogue (e.g., illness, serious family emergency, military obligations, religious holidays), and should be communicated to the instructor in advance. Students must attend the session of student presentations and in-class exam. Regardless of attendance, students are responsible for all material presented in class and meeting the scheduled due dates for class assignments. Students are not allowed to make up work unless illness or other unanticipated circumstance occurs, warranting a medical (family) excuse and resulting in the student missing a homework or project deadline.

Please come to class on time and be prepared to stay until the end of class. Cell phones should not be used in class. Please set them to “vibrate” in case of emergency or if you have an urgent personal or professional reason for expecting a call. “Side” conversations among students are not acceptable unless your conversation is a course-related one.

Academic integrity: As a student registered at this University, it is expected that you will adhere to only the strictest standards of conduct. It is recommended that you review the latest edition of the *Student Conduct Code* book, as well as the latest *Undergraduate & Graduate Catalog* to familiarize yourself with the University’s policies in this regard. Your continued enrollment in this course is an implied contract between you and the instructor on this issue. From this point forward, it is assumed that you will conduct yourself appropriately. Academic integrity relates to the appropriate use of intellectual property. The syllabus, lecture notes, and all materials presented and/or distributed during this course are protected by copyright law. Students are authorized to take notes in class, but that authorization extends only to making one set of notes for personal use. As such, students are not authorized to sell, license, commercially publish, distribute, transmit, display, or record notes in or from class without the express written permission of the instructor.

Students are expected to abide by the Academic Handbook, located at <http://students.georgiasouthern.edu/sta/guide/>. Your failure to comply with any part of this Handbook may be a violation and thus, you may receive an F in the course and/or be referred for disciplinary action.

GENERAL DISCLAIMERS

The contents of this syllabus are as complete and accurate as possible. The instructor reserves the right to make any changes necessary to the syllabus and course material. The instructor will make every effort to inform students of changes as they occur. It is the responsibility of the student to know what changes have been made in order to successfully complete the requirements of the course.